<u>REMARKS</u>

News claims 16-20 have been added. Claims 1-20 are currently pending in the present application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

<u>NEW CLAIMS 16-20</u>

New claims 16-20 have been added to define aspects of the invention more particularly and distinctly. Support for the new claims can be found on page 13-16 of the specification. No new matter has been added.

<u>REJECTION OF CLAIMS 1-15 UNDER 35 U.S.C. 103(a)</u>

Claims 1-15 are rejected under 35 U.S.C. 103(a) for the reasons on pages 2-12. Specifically, claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guha et al. (US Pat. No. 6,092,072, hereinafter the Guha reference).

The rejections under 35 U.S.C. 103 are respectfully traversed, at least insofar as applied to the new claims, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth hereinbelow.

The Abstract, line 7, Column 1, lines 5-10, Column 4, lines 35-45, Column 6, lines 54-62, Column 7, lines 25-37, Column 8, lines 5-10, and 15-35, Column 9, lines 30-35, and FIG. 4 and FIG. 7 of the Guha reference are cited as teaching the clustering method and apparatus as claimed. It is respectfully submitted that the Guha reference fails to teach or suggest the clustering method and apparatus as claimed.

As a preliminary matter, the Guha reference appears to be directed to a class of hierarchical clustering algorithms that operate in a very different manner as compared

4

with the class of partitional clustering algorithms of which the invention as claimed is directed. (See, Guha, col. 1 lines 24 to 62).

Regarding claim 1, the Action states on page 3, "the teachings disclosed by Guha are essentially the same as the claimed limitations." Furthermore, the Action states, "the c parameter disclosed by Guha has the same functionality as the claimed size parameter." It is respectfully submitted that these two statements are inaccurate.

Applicant agrees with the Action that Guha fails to expressly disclose the steps of

(a) receiving a plurality of data points for clustering;
(b) receiving a size parameter for specifying the number of data points to be moved at one time;
(c) clustering the data points by using the size parameter to generate clustered results;
(d) determining whether the clustered results are satisfactory;
(e) when the clustered results are satisfactory, stop clustering;
(f) otherwise when the clustered results are not satisfactory, revise the size parameter, perform clustering based on the revised size parameter and the clustered results, and proceed to step (d).

However, as discussed previously, the Guha reference is directed to a very different type of clustering (i.e., a hierarchical clustering method). Moreover, the c parameter of Guha is <u>not</u> the same as the claimed size parameter. The c parameter represents a "constant number of well scattered points within the cluster," that "represents each cluster to be merged." (col. 6, lines 54 to 55) In sharp contrast, the <u>size parameter of the invention specifies the number of data points to be moved at one time from one cluster to another cluster</u> as claimed.

Regarding claim 2, the Action states on page 3, "the teachings disclosed by Guha are essentially the same as the claimed limitations." Furthermore, the Action states, "the c parameter disclosed by Guha has the same functionality as the claimed

size parameter, they both help in determining whether the datasets will be merged." It is respectfully submitted that these two statements are inaccurate.

Applicant agrees with the Action that Guha fails to expressly disclose the steps of:

> (a) evaluating subsets of data points in each cluster for moving into every other cluster by using a predetermined metric; wherein the number of data points in the subset is specified by the size parameter.

However, as discussed previously, the Guha reference is directed to a very different type of clustering. Moreover, the Guha reference fails to "evaluate subsets of data points in each cluster for moving into every other cluster by using a predetermined metric," as claimed. In sharp contrast, the Guha reference describes a clustering method that merges clusters until a desired number of clusters is reached. It is noted that the clustering method and apparatus as claimed does not perform any merging of cluster.

Guha Reference Fails to Identify Problem

The Guha reference fails to even identify or suggest the disadvantages or problems of prior art partitional clustering algorithms.

As described in the Background of the patent application, the prior art partitional clustering algorithms move a single point per iteration, which leads the following disadvantages set forth on pages 2-4 of the specification:

> It is to be appreciated that <u>moving one data point at a time between two clusters is inefficient especially when many thousands, tens of thousands of data points, or more need to be moved</u>. One can analogize this situation with a more common example of negotiating the best price for an automobile.
>
> Consider an example when a seller and a buyer are separated by a difference of five thousand dollars between an initial offer price (e.g., $10,000) and a counter offer price (e.g., $15,000). During this stage of the negotiations, it would be very inefficient if the buyer's second offer is $10,000.01 and the seller counters with $14,999.99. In fact, if the negotiations where to continue one cent at a

time, it is apparent that both the seller and buyer would be negotiating for a long time to come before reaching any type of agreement. Consequently, the speed at which an agreement is reached one cent at a time is very slow at best.

Instead, it would be more efficient, and one would expect the buyer in real life to move perhaps by a thousand dollars or more in the second offer by offering, for example, $11,000. Similarly, one would expect the seller to move perhaps a thousand dollars in a counter offer by countering with $14,000. Perhaps, when the buyer and seller were only one thousand dollars apart, the buyer and seller would then start negotiating in increments of hundreds of dollars. Similarly, when the buyer and seller were only one hundred dollars apart from reaching an agreement, both would begin to negotiate in increments of single dollars and then in cents.

The inefficient negotiation strategy of moving one cent at a time, regardless of how far apart the parties are, is comparable to what is currently being performed by prior art clustering methods. Since prior art methods are limited to moving a single data point per iteration, this is similar to negotiating on a per penny basis when in fact the parties (e.g., data points and center points) are thousands of dollars apart.

From the above example, it can be appreciated that a mechanism to move more than one data point at a time is desirable. Unfortunately, there is no mechanism for moving more than one data point at a time without losing precision. In fact, if the prior art approaches were to move than one point at a time, there is no method that exists to quantify the amount of error injected by moving more than one point at a time. [Emphasis Added.]

The dependent claims incorporate all the limitations of the independent claim. In this regard, the dependent claims also add additional limitations, thereby making the dependent claims a fortiori and independently patentable over the cited references.

Regarding dependent claims 3-10, the Action admits that the specific claim limitations added by each of the dependent claims are not expressly disclosed by the Guha reference. The Action then continues "However, the teachings disclosed by Guha are essentially the same as the claimed invention. It would have been obvious to one having ordinary skill in the art at the time that the invention was made to modify the teachings of Guha. One of ordinary skill in the art would have been motivated to do this because it would enable the clustering of large databases. (Col. 1, lines 5-10)

It is respectfully submitted that these additional limitations set forth in the dependent claims are not taught or suggested by the Guha reference. In this regard, applicant respectfully requests that specific portion of the Guha reference be provided that teach the specific limitations as claimed.

In view of the foregoing, it is respectfully submitted that the Guha reference fails to teach or suggest the clustering method and system as claimed. Withdrawal of the rejection of the claims under 35 U.S.C. 103(a) is respectfully requested.

In view of the foregoing, it is respectfully submitted that all pending claims of the present invention are now in condition for allowance. Reexamination and reconsideration of the pending claims are requested, and allowance at an early date solicited. The Examiner is invited to telephone the undersigned if the Examiner has any suggestions, thoughts or comments, which might expedite the prosecution of this case.

Respectfully submitted,

Eric Ho, Reg. No. 39,711
Attorney for Applicant

Law Offices of Eric Ho
20601 Bergamo Way   Tel: (818) 998-7220
Northridge, CA 91326   Fax: (818) 998-7242

Dated: December 11, 2002
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231 on the date below.

Eric Ho (RN 39,711)   December 11, 2002
                                        (Date)

8